APRIL/MAY 2024

CEEL54A/BEEL54A — MEDICAL ELECTRONICS (ELECTIVE I)

Time : Three hours Maximum : 75 marks

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SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What are bio-electric potentials?
2. Define CMRR of an op-amp.
3. What does EEG deal with?
4. Expand EMG and ERG.
5. Specify the average values of systolic and diastolic pressures of normal adult.
6. What are the basic elements of a patient monitoring system?
7. What are soft X-rays? What is their use?
8. What is X-Ray?
9. What is meant by diathermy?
10. What is short wave diathermy?

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) What are the requirements for biological signal amplifiers? Discuss in brief.

Or

(b) Design a simple medical preamplifier and explain its working.

12. (a) Discuss the ECG.

Or

(b) Describe the recording set up used in ERG.

13. (a) Discuss in brief, the measurement of heart rata.

Or

(b) Describe the EM method to measure the blood flow.

14. (a) Discuss the applications of X-ray examination.

Or

(b) List the advantages of Laser surgery.

15. (a) Explain the different techniques involved in electrosurgical diathermy.

Or

(b) Explain microwave diathermy.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain any two types of isolation amplifiers with suitable circuits.

17. Discuss the different lead configurations used in EEG.

18. Describe the plethysmographic technique to measure the total lung capacity.

19. Describe the various components of an X-ray machine.

20. Draw the block diagram of ultrasonic diathermy unit and explain its working.

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